



## Sewage Treatment System Helps Arizona Town

### Full Mitigation Best Practice Story

#### *Apache County, Arizona*

**Eagar, AZ** - When the Rodeo-Chediski Fire swept through Arizona, thousands of fleeing residents found a safe haven in the eastern Arizona town of Eagar. Though tiny, Eagar boasted the biggest shelter around-- the 120,000-square-foot Round Valley Ensphere, billed as the only domed high school football stadium in the nation.



Altogether, more than 9,800 evacuees from Show Low and the Lakeside-Pinetop area poured into the "Home of the Dome," tripling Eagar's population almost overnight. The sudden population increase took its toll on the town's infrastructure. Eagar's three connected sewage ponds nearly overflowed. Had the disaster kept evacuees in Eagar for another week, the ponds could have gone over the banks, Eagar officials believed.

A spill could have caused a nasty chain reaction of contamination, from nearby Nutrioso Creek to the Little Colorado River and Lymon Lake, a popular spot for swimming and recreation.

The near-miss convinced Eagar officials they needed to be better prepared to avert any future environmental disaster. They proposed to upgrade their sewage treatment system with an innovative solar-powered aeration system that would increase capacity and continue to operate if a storm knocked out electricity.

This system became a reality when Eagar received funding from the Federal Emergency Management Agency's Hazard Mitigation Grant Program (HMGP) through the State of Arizona. This grant was made available after the Rodeo-Chediski wildfire of 2002 was declared a major disaster and helps Eagar reduce loss of life and property in future disasters.

The \$172,171 grant from FEMA's HMGP, nearly 75 percent of the \$233,444 project, enabled Eagar to install nine solar-powered aerators in the sewage ponds and operational by February 2003.

"Ever since [the aerators were installed], the upgraded system has improved the quality of the effluent (sewage) and performed regardless of the weather," said Milt Nelson, the town's wastewater operator. "It rained four inches all at once last summer, but the system wasn't really challenged."

Besides better protection against spills, the solar-powered sewage treatment system offered other benefits. Improved aeration, for instance, helped increase the capacity of the sewage ponds, increasing the depth of the effluent from 5.5 feet to 6.5 feet.

The use of the solar panels reduced energy costs. "It's a big saver," said Rick Pinckard, Eagar's finance director and assistant town manager. The solar-powered circulators, he added, were more environmentally friendly. In quality, the treated effluent met "gray water" standards and was used for irrigation.

If another wildfire brings thousands to the shelter of the dome again, Eagar officials say they are confident that a sudden influx of visitors can stay in Eagar safely without pushing the town's wastewater ponds over the brink of overflow.

"We commend the town of Eagar for recognizing a potentially disastrous problem and immediately taking steps to correct it," said Mimi Diaz, program manager for the Hazard Mitigation Grant Program of the Arizona Division of Emergency Management. "This project embodies the spirit of mitigation."

#### Activity/Project Location

Geographical Area: **Single County in a State**

FEMA Region: **Region IX**

State: **Arizona**

County: **Apache County**

City/Community: **Eagar**

#### Key Activity/Project Information

Sector: **Public**

Hazard Type: **Dam/Levee Break**

Activity/Project Type: **Retrofitting, Structural**

Activity/Project Start Date: **06/2002**

Activity/Project End Date: **07/2003**

Funding Source: **Hazard Mitigation Grant Program (HMGP)**

Funding Recipient: **Local Government**

Application/Project Number: **9999**

#### Activity/Project Economic Analysis

Cost: **\$172,171.00 (Actual)**

#### Activity/Project Disaster Information

Mitigation Resulted From Federal  
Disaster? **Unknown**

Value Tested By Disaster? **No**

Repetitive Loss Property? **No**

#### Reference URLs

Reference URL 1: **<http://www.dem.state.az.us/>**

Reference URL 2: **<http://www.fema.gov/government/grant/hmgrp/>**

## Main Points

- When the Rodeo-Chediski Fire swept through Arizona, thousands of fleeing residents found a safe haven in the eastern Arizona town of Eagar.
- Eagar boasted the biggest shelter around-- the 120,000-square-foot Round Valley Ensphere, billed as the only domed high school football stadium in the nation
- The sudden population increase took its toll on the town's infrastructure. Eagar's three connected sewage ponds nearly overflowed. Had the disaster kept evacuees in Eagar for another week, the ponds could have gone over the banks.
- The \$172,171 grant from FEMA's HMGP, nearly 75 percent of the \$233,444 project, enabled Eagar to install nine solar-powered aerators in the sewage ponds and operational by February 2003.
- Besides better protection against spills, the solar-powered sewage treatment system offered other benefits. Improved aeration, for instance, helped increase the capacity of the sewage ponds, increasing the depth of the effluent from 5.5 feet to 6.5 feet. And the use of the solar panels reduced energy costs



Solar Powered Aerator located on the Town of Eagar



One of Eagar, Arizona's wastewater treatment ponds with solar aerator